

B2103  
MAVIA

DEPARTMENT OF ENVIRONMENTAL QUALITY  
AIR QUALITY DIVISION  
ACTIVITY REPORT: Scheduled Inspection

B210349311

FACILITY: GLWA Water Resource Recovery Facility		SRN / ID: B2103
LOCATION: 9300 W. JEFFERSON AVE, DETROIT		DISTRICT: Detroit
CITY: DETROIT		COUNTY: WAYNE
CONTACT: Melvin Dacres , Chemist		ACTIVITY DATE: 06/20/2019
STAFF: Stephen Weis	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Compliance inspection of the Great Lakes Water Authority's Water Resource Recovery Facility (WRRF). The WRRF facility is scheduled for inspection in FY 2019.		
RESOLVED COMPLAINTS:		

**Location:**

Great Lakes Water Authority  
Water Resource Recovery Facility (SRN B2103)  
9300 West Jefferson Avenue  
Detroit

**Date of Activity:**

Thursday, June 20, 2019

**Personnel Present:**

Steve Weis, EGLE-AQD Detroit Office  
Melvin Dacres, Water Systems Chemist, GLWA

**Purpose of Activity**

A self-initiated inspection of the Great Lakes Water Authority (GLWA) Water Resource Recovery Facility (hereinafter "GLWA WRRF", or "WRRF") was conducted on Thursday, June 20, 2019. The GLWA WRRF is on my list of sources targeted for an inspection during FY 2019. The purpose of this inspection was to determine compliance of operations at the GLWA WRRF facility with applicable rules, regulations and standards as promulgated by Public Act 451 of 1994 (NREPA, Part 55 Air Pollution Control), and Federal standards. The facility is also subject to the terms and conditions of Renewable Operating Permit (ROP) No. MI-ROP-B2103-2014d.

**Facility Site Description**

The GLWA WRRF facility is located along Jefferson Avenue in the southwest portion of the City of Detroit. The facility is located just north of the Rouge River, and most of the wastewater receiving and treatment operations are located to the west of Jefferson Avenue. The Biosolids Drying Facility (BDF), which is part of the GLWA WRRF stationary source but is operated by New England Fertilizer Company (NEFCO), is located on the east side of Jefferson Avenue, directly across the street from the WRRF. The construction of the Biosolids Drying Facility was completed in the Fall of 2015, and the BDF commenced operating at that time. The facility's chlorination process is located in buildings on the east side of Jefferson Avenue, directly south of the BDF, on a parcel that extends east to the original Rouge River channel.

The GLWA WRRF is located adjacent to primarily industrial properties, but there are residential neighborhoods in relatively close proximity. The City of River Rouge is located across the Rouge River from the WRRF, and the northern edge of the residential area in this city is just over ¼ mile south of the WRRF's southern property line. There are also residential areas in Detroit to the north and northwest of the northern portion of the WRRF property, where the facility's secondary treatment and biosolids thickening tanks are located, that are located less than 100 yards from the WRRF property line. The areas to the south and east of the GLWA WRRF contain some heavy industrial facilities. Zug Island, which contains some of U.S. Steel's operations (blast furnaces) and other activities associated with steelmaking, such as EES Coke's coke oven, lies just to the east and northeast of the GLWA WRRF, across the original Rouge River channel. U.S. Gypsum and Carmeuse Lime, Inc. are located directly across the Rouge River in the city of River Rouge. There are material/aggregate handling

facilities operating in the area south of the WRRF's property line between the Rouge River and Brennan Street.

### **Facility Operations**

The GLWA WRRF is a publicly owned wastewater treatment/water resource recovery facility. The facility operates as part of the Great Lakes Water Authority's sewerage handling and treatment system. The system was formerly owned and operated by the City of Detroit and operated by the Detroit Water and Sewerage Department (DWSD). GLWA began a 40-year lease with the City of Detroit that provided for GLWA's operation of the regional water and sewerage system on January 1, 2016. The WRRF is a municipal utility that operates 24 hours per day, 7 days per week, and every day of the year.

The GLWA WRRF is one of the largest such facilities in terms of design treatment capacity in the world; according to information on the GLWA website, the facility is the largest single site wastewater treatment facility in the United States. The treatment capacity, or wet weather capacity, of the WRRF is 1.7 billion gallons per day primary treatment capacity, and up to 930 million gallons per day (MGD) of wastewater can receive secondary treatment (activated sludge, disinfection and dechlorination). The average dry weather flow of wastewater influent to the WRRF is 750 MGD.

The GLWA WRRF facility collects and treats domestic and industrial wastewater from the Metro Detroit area, serving the City of Detroit and 76 other communities in Southeast Michigan. The facility receives wastewater via three (3) major interceptors – the Detroit River interceptor, which contains flow from Detroit; the Oakwood/Rouge interceptor, which directs flow from the west side of Detroit and western suburbs; and the North interceptor (also known as the Oakland Macomb Interceptor Drain, or OMID), which contains flow from some of Detroit's northern suburbs.

The wastewater treatment process involves the removal of large solids from the influent wastewater stream using bar racks and grit chambers; primary and secondary biological treatment to remove suspended and dissolved solids; secondary treatment, which involves the use of oxygen activated sludge tanks and clarifier tanks; and chlorination of water from secondary clarifiers, followed by dechlorination of the effluent stream prior to discharge. The treated wastewater is discharged as effluent to the Rouge and Detroit Rivers. Solids generated during the primary and secondary biological treatment processes are gravity thickened, then the resulting sludge/biosolids are dewatered using centrifuges and belt filter presses. After dewatering, the sludge is currently disposed of utilizing one of the following options:

- 1) The biosolids are incinerated in one of the facility's eight multiple hearth sewage sludge incinerators, which are located in the incineration complex building.
- 2) The material is conveyed under Jefferson Avenue to the NEFCO BDF, where the biosolids are dried into pellets that are used either as a fertilizer pellet, or as a fuel for cement kilns. The BDF process consists of four biosolids dryers, which are capable of processing up to 576 dry tons of biosolids per day (for all four dryers).
- 3) The biosolids can be directed to WRRF's on-site Central Offload Facility, where lime is added to the material to stabilize it by driving off additional moisture, and to reduce any remaining pathogens. Material that is processed at the Central Offload Facility is trucked off-site for either land application, or disposal in a landfill. GLWA plans to decommission the Central Offload Facility sometime in 2019. In the future, GLWA plans to utilize offsite disposal only in cases of emergency, and not as a dedicated biosolids management option.

The wastewater treatment portion of the facility consists of a multitude of treatment tanks that provide primary and secondary treatment of wastewater influent to the WRRF. Many of these wastewater treatment tanks are open to the atmosphere, and the presence of odorous material in the tanks has the potential to cause an odor in the ambient air. However, the wastewater treatment processes, including the treatment tanks, are not permitted by the Air Quality Division as this type of equipment is exempt from air quality permitting requirements per the provisions of Michigan Administrative Rule 285(2)(m).

The primary sources of air emissions at the WRRF are the eight multiple hearth sewage sludge incinerators, or SSIs, located in the WRRF's incineration complex, and the four natural gas-fired biosolids dryers at the NEFCO BDF. The SSIs receive dewatered sludge (i.e. sludge that has been processed in the filter presses and centrifuges) via a system of belt conveyors the move sludge material into the SSI area, and convey it to the individual SSIs. The sludge conveyors are equipped with weigh scales that continuously monitor the amount of

the sludge that is being conveyed to the SSI area, and to each SSI. Sludge enters at the top of the SSIs and works its way down through the hearths as it is pushed along the hearths by rabble arms. Each SSI is designed for 12 hearths, but the top hearth was removed to create what is referred to as a double zero hearth afterburner between hearths 1 and 2 for air emission control.

In addition to the afterburner section, the exhaust air flow from each of the incinerators/SSIs, identified as SSI numbers 7 through 14, or EUINC07 through EUINC14, is directed from the top of each SSI through a series of scrubbers to treat the exhaust air flow to control the air emissions. The treated exhaust is discharged to the ambient air via two tall stacks (one that vents incinerators 7-10, one that vents incinerators 11-14) that discharge 254 feet above grade. The incinerators and their associated emissions control systems were upgraded leading up to the March 21, 2016 effective date of 40 CFR Part 60 Subpart M (Emission Guidelines and Compliance Times for Existing Sewage Sludge Incineration Units). The regulatory requirements introduced by Subpart M include putting forth emission standards/limits for several air pollutants emitted by the SSIs, along with the requirement to conduct periodic compliance emissions testing to demonstrate compliance with the emission limits. The upgrades and changes at the WRRF facility involved modifying some of the hearths, air ports and burners in the eight SSIs to achieve improved combustion and emissions control, and upgrading the scrubber systems on each of the SSIs. The SSI scrubber improvements involved:

- Installing new quench sprays and a quench duct section upstream of the scrubbers to ensure proper saturation of the exhaust from the Complex 2 incinerators. The ductwork leading to the scrubbers was also reconfigured to allow for the new scrubber components.
- Fitting the existing impingement tray scrubbers with new trays and water sprays. Per the information presented in the application materials for Permit to Install 61-13, this part of the scrubber system removes larger and medium-sized particles, further cools the exhaust gases, and removes acid gases and metals, not including mercury.
- Installation of new venturi scrubbers following the impingement tray section of the scrubber system. The venturi scrubbers were equipped with inlet and throat sprays.
- Installation of mist eliminators following the venturi section of the scrubber system to remove water droplets from the exhaust stream.

Each of the four biosolids dryers, also referred to as “dryer trains”, are natural gas-fired triple-pass rotary dryers that are equipped with low-NO<sub>x</sub> burners. Dried solids that are produced in the dryers are discharged to a cyclonic separator, then screened to sort the dried solids as either product, recycle material and unusable solids material. The recycle material is sent to recycle bins (each dryer train has its own recycle bin), and the recycle bins are equipped with a baghouse for particulate control. The ambient exhaust flow from each of the dryer trains is exhausted through an emissions control system; the exhaust is direct through a cyclone to a three-stage impingement tray (IT) scrubber followed by a regenerative thermal oxidizer (RTO), and finally through a packed tower scrubber. Some of the exhaust from the IT scrubbers is recycled to the inlet of the dryers for heat recovery. The treated exhaust from the dryers is discharged to the ambient air via four stacks (one for each dryer) that discharge 130 feet above grade. According to information provided in the Compliance Assurance Monitoring (CAM) plan for the BDF, vendor data provides that the impingement tray scrubbers should provide 98% removal efficiency of particulate matter, and the RTO is designed to provide 98% destruction efficiency for VOC and CO emissions. In addition to the control equipment associated with the process equipment, the air from inside of the BDF building is vented through four alkaline hypochlorite scrubbers to control potential odors present in the building air. The scrubbers exhaust through stacks 80 feet above grade.

### **Inspection Narrative**

I arrived at the GLWA WRRF facility at 11:00am. Melvin Dacres met me at the security office, and we proceeded to the control and conference room in the Complex 2 SSI building. Compliance stack testing was ongoing, with SSI Unit No. 10 being tested at the time of my visit. I planned the date of the site visit to observe a portion of the stack testing, along with conducting a compliance review of the facility's operations.

The Complex 2 conference and control room serves as the staging area for the compliance emissions testing. When Melvin and I entered, we were met by the WRRF facility's incineration consultant, Gene Waltz of Incinerator Rx, Malcolm from GLWA, and Mike Kelly from the company that was performing the compliance emissions testing, CK Environmental, Inc. Gene provided me with an update regarding the testing. He told me that much of the testing on SSI Unit No. 7 was done on Tuesday June 18 (PM and NO<sub>x</sub> testing still needed to be

done), and all of the required testing for SSI Unit No. 9 was completed on Wednesday, June 19. Today's testing was focused on SSI Unit No. 10. Gene provided me with the proposed test schedule through Sunday, June 23.

Gene showed me how the operating parameters of the incinerators and their associated control equipment are monitored. He pointed out on the SCADA display screen how various parameters are being monitored, including the temperatures of the hearths, the pressure drop across the scrubber, the scrubber flow rate and the scrubber liquid pH. He said that operating targets are 3 dry tons per hour of sludge feed rate for each SSI, and 30% solids. Gene said that the cake bin has been in the low 30 percent range, and that it was 31.5% that day. He said that the set point for the sludge feed rate is 2.8 dry volatile tons per hour, which he equated to approximately 10,000 BTU per dry volatile ton.

Tom Gasloli from EGLE-AQD's Technical Programs Unit was also onsite to observe the emissions testing. He stopped in the conference room to look at the filters from the first test run of the day (the second run started at 11:37am).

At around that time, Melvin and I sat down at one of the tables in the room to perform the compliance review of the WRRF facility. I had an electronic copy of the facility's ROP open on my laptop, and we reviewed and discussed the facility's compliance with the ROP. We started with the Source-Wide Conditions, and we proceeded to discuss the various Emission Unit and Flexible Group tables in the ROP. As we went through the permit and regulatory requirements, Melvin described how GLWA tracks compliance with the requirements. He showed me some of the records that are being kept to track compliance with some of the requirements in the ROP. As we discussed the requirements in the ROP, I requested copies of some of the compliance records. I received some copies, and Melvin sent me several records via an e-mail correspondence dated July 12, 2019. The facility's compliance with the requirements of the ROP will be discussed in the next section of this report. Melvin and I concluded our compliance review just before 1:00pm.

I stayed at the facility with Tom Gasloli and observed the compliance stack test as test runs 2 and 3 were completed. I periodically took some readings from the SCADA screen display, and I observed the operation of SSI No. 10. I left the facility at 3:50pm.

## **Permits/Orders/Regulations**

### ***Permits***

The primary source of the regulatory requirements that are currently applicable to the GLWA WRRF are found in the facility's Renewable Operating Permit. The current version of the ROP, No. **MI-ROP-B2103-2014d**, became effective on August 29, 2017. This modification to the ROP, which was a minor modification, was made to incorporate a change in the control equipment for the sludge dryers at the BDF – the addition of a packed tower scrubber, which is exempt from AQD permitting.

The ROP references the applicable State air regulatory requirements, as well as the applicable Federal air regulatory requirements. The primary regulation that is applicable to the operations at the GLWA WRRF is **40 CFR Part 60, Subpart M**. As mentioned previously in this report, this Federal standard has an effective date of March 21, 2016. The requirements of Subpart M are adopted by reference into the Michigan Administrative Rules per **Michigan Administrative Rule 902 (R 336.1902)**, and the requirements of Subpart M were included in the Michigan rules as **Michigan Administrative Rule 972 (R 336.1972)**, which is listed as an applicable requirement in the ROP.

The following paragraphs provide a summary of the compliance of the operations associated with the GLWA WRRF facility with the terms and conditions put forth by ROP No. MI-ROP-B2103-2014d, with the headings representing the sections of the ROP.

### **Source-Wide Conditions**

The Source-Wide Conditions table in the ROP addresses two separate items:

- Emission standards put forth in 40 CFR Part 61 for beryllium and mercury;
- Fugitive dust control measures on the Detroit WWTP property.

40 CFR Part 61, Subparts C (National Emission Standards for Beryllium) and E (National Emission Standards

for Mercury) are applicable to the GLWA WRRF due to the potential presence of these materials in the wastewater influent treated at the facility, as well as in the sludge/biosolids produced by the treatment process. Section "I. Emission Limits" of the Source-Wide Conditions section contains emission limits for these two elements, while under section "V. Testing/Sampling", Special Condition (SC) V.1 requires that monthly samples of the sewage sludge be tested for mercury content.

Melvin confirmed that the method for taking samples has not changed since we discussed these requirements during last year's site visit - samples of sludge are taken around the first of every month from the Central Offload Facility (COF), where sludge is prepared for off-site use/disposal (recall that the COF is planned to be decommissioned), and from the incinerator feed belts (specifically the J belt). The samples are analyzed at the GLWA analytical lab, which is located at 2<sup>nd</sup> and Temple Streets in Detroit, and the results go into the report required by 40 CFR Part 503 (Standards for the Use or Disposal of Sewage Sludge). The Part 503 report requires analysis of cadmium, chromium, mercury, beryllium, arsenic, lead and nickel content of the sludge samples. The Part 503 report is sent to EGLE-Water Division staff in October of each year, and to EPA in January. GLWA has been sending copies of the Part 503 report via e-mail to EGLE-AQD, typically in November.

Melvin told me that the Hg results measure well below the 1.43 mg/kg trigger threshold. He showed me some sample test results, which showed beryllium and mercury well below the limits in Subparts C and E. The facility is **in compliance** with these requirements. Melvin also told me that the laboratory is going to move from its location at 2<sup>nd</sup> and Temple Streets to the GLWA WRRF facility sometime later in 2019.

Regarding the fugitive dust control measures, the requirements in this section of the ROP that relate to fugitive dust management cite **Consent Order SIP No. 11-1993** as an applicable requirement. This Consent Order is part of the State of Michigan's State Implementation Plan (SIP); this part of the SIP was submitted by the State of Michigan as part of the attainment demonstration for PM-10. The Michigan Department of Natural Resources submitted the PM-10 SIP to EPA on June 11, 1993, and, after a couple of revisions, the nonattainment area PM SIP for Wayne County, Michigan was approved and became effective on February 16, 1995. One element of the SIP was the requirement that facilities with designated standard industrial classifications that are located in the area designated in Table 36 of Michigan Administrative Rule 371 "...develop and implement an approved fugitive dust control operating program and to have the program embodied in a legally enforceable order..." (this quote was taken from the preamble to the Consent Order). Many of the larger facilities in the portion of Wayne County designated in Table 36 were issued Orders as part of the SIP. The Detroit WWTP was issued the Consent Order referred to as SIP No. 11-1993.

The fugitive dust-related conditions in the Source-Wide Conditions section of the ROP contain requirements to perform daily sweeping in the material handling area when material handling takes place (Special Condition IX.1.1.a); weekly sweeping of paved roadways (IX.1.1.b); adding gravel cover to gravel parking areas as needed (IX.1.2.); washing sludge from the exterior of vehicles that haul sludge from the facility (IX.1.7); and daily washings/cleanings of roadways in the sludge haul area (IX.1.8). A checklist is kept by GLWA of the daily sweepings and washings of roadways. Melvin referenced a facility document that has been discussed during past site visits titled "Fugitive Dust Control Treatment Log" on which fugitive dust management measures are tracked. A copy of the form is attached to this report for reference. In addition, I also received a copy of an example truck ticket form from July 12, 2019 that shows whether the tires were washed prior to the truck leaving the facility, which is attached to this report for reference. Facility staff complete the form by listing the areas of the facility that were washed/swept, and the date. There is also a group of rows provided that list the reasons that the frequency of treatment can be lessened, as put forth in SC IX.1.1(c). Regarding SC IX.6, Melvin confirmed that GLWA does not keep sludge outside. Regarding SC IX.8, I was told that the daily sweepings and/or washings of the roadways take place on days when there is no precipitation. The facility looks to be **in compliance** with the fugitive dust management requirements.

GLWA looks to be in compliance with the requirements in the Source-Wide Conditions section of their ROP.

## **EULIMEPAD**

EULIMEPAD is the only Emission Unit identified in the ROP that is not part of a Flexible Group. The ROP contains the following description for EULIMEPAD:

"The old sludge/lime mixing facility and the Lime Pad have been replaced with indoor Central Offloading Facility (COF) and a new outdoor Lime Pad facility. Belt conveyors transfer sludge cake from Complex 1 and Complex 2 dewatering units to three holding tanks and the cake is then transferred to three cake mixers where lime from three silos are added by gravity to mixers. All the cake mixers are connected to a scrubber, where any residual

dust and gases are scrubbed. The mixture is dropped directly into trucks for transport to a landfill. Occasionally, the mixture of cake and lime is dropped into the Lime Pad area, where scum or ash is added and mixed with front loaders. Lime Pad is an outdoor three-sided concrete/steel mixing area used to prepare residuals for disposal in a sanitary landfill. The mixture is allowed to stabilize, then loaded into trucks for transport to a landfill.”

As mentioned previously in this report, during my June 20 site visit, I was told that GLWA plans to eliminate offsite disposal of sludge (aside from emergency needs), and to decommission the COF sometime in 2019.

The Emission Unit table only contains two permit Special Conditions, both in Section “IX. Other Requirements” – IX.1, which requires that all trucks hauling sludge from the facility have their wheels cleaned, and IX.2, which requires that all sludge conveyors and conveyor transfer points be inspected one per shift. Melvin explained that there is a weight ticket referred to as a “Scale House Ticket” form for each inbound and outbound sludge hauling truck on which the weights of the truck is entered. If the “Material Hauled” field on the form shows sludge or lime, then the truck wheels are washed.

Regarding the conveyor inspections, required in SC IX.2, Melvin said that all of the conveyors are enclosed, so no material can drop to the ground. Melvin said that the ROP renewal application (which was submitted to AQD via correspondence dated July 23, 2018) proposes to remove SC IX.2 since the conveyors are enclosed, so inspection would not be practical. The appropriate way to address the conveyors will be addressed during the drafting of the ROP renewal. The facility looks to be **in compliance** with the conditions in EULIMEPAD.

### **FGC1ASH and FGC2ASH**

This Flexible Group addresses the incinerator ash conveyance and storage systems associated with Incinerator Complexes 1 and 2. The ash is stored prior to being transported to a landfill for disposal.

The Complex 1 ash conveyance and storage systems addressed in FGC1ASH last operated on January 4, 2017, and they are now permanently shut down. The requirements under FGC1ASH are no longer applicable to the facility, and this Flexible Group should be removed during the ROP renewal.

The paragraphs that follow provide a summary of the GLWA WRRF facility’s compliance with the Special Conditions for Flexible Group FGC2ASH.

#### I. Emission Limits

There are two Special Conditions- I.1 contains an EGLE-AQD Air Pollution Control Part 3-based particulate limit of 0.2 lbs. of particulate matter per 1,000 lbs. of exhaust air, and I.2 is an opacity limit put forth by Subpart MMMM. The methods of compliance with the particulate limit are to monitor and record the pressure drop across the baghouse, and to perform visible emission observations. The opacity limit also requires that the same tasks be performed as part of the compliance demonstration for this limit. The facility is completing these tasks, which will be covered in more detail in the discussions for SCs V.1 and VI.1.

#### II. Material Limits

There are no material limits put forth for this Flexible Group.

#### III. Process/Operational Restrictions

Special Condition (SC) III.1 limits the pressure drop across each baghouse controlling particulate emissions to 10 inches of water. Pressure drop readings are taken once per shift and recorded on the “Ash System Shift Report”. This report is completed by GLWA staff during each shift, and it is accessible via the facility’s central data system. This report is also used to log visible emissions during each shift. Melvin sent me a copy of the Complex 2 Ash System Shift Report that was completed for May 11, 2019 as an example, which is attached to this report for reference. This report shows no visible emissions present (indicated as “absent”), and differential pressure readings with a high reading of 5 inches of water.

#### IV. Design/Equipment Parameters

There are no design or equipment parameter requirements associated with this Flexible Group.

#### V. Testing/Sampling

SCs V.1 and V.2 contain requirements put forth by Subpart M MMM. In relation to this particular Flexible Group, the language in Subpart M MMM addresses fugitive emissions from ash conveying systems, including conveyor transfer points. As discussed in the "I. Emission Limits", these testing requirements relate to the visible emissions limit in SC I.2, and they involve performing Method 22 VE readings over three 1-hour observation periods to check for compliance with the 5% opacity limit. Melvin told me that visible emissions readings were taken during the initial compliance emission tests for the Complex 2 incinerators by the test consultant, Gammie Air Monitoring, LLC, to satisfy the Subpart M MMM requirements and also during the subsequent compliance emission tests. The facility is in compliance with these conditions.

#### VI. Monitoring/Recordkeeping

Special Conditions:

SC VI.1 – GLWA is monitoring and recording the pressure drop across the baghouses, and performing and logging visible emission observations on the Complex 2 Ash System Shift Report, as previously described.

SC VI.2 – A Site-Specific Monitoring Plan was submitted for the facility that included the ash handling system. It was received by EGLE-AQD on February 10, 2015, and is located in the WRRF facility file.

#### VII. Reporting

All required reports required by SCs VII.1 through 3 are being submitted.

#### VIII. Stack/Vent Restrictions

The stack parameters described in SC VIII.1 and VIII.2 were not discussed during this site visit.

#### IX. Other Requirements

There are no SCs in this section for this Flexible Group.

#### **FGCOMPLEX1**

The Complex 1 incinerators last operated on January 4, 2017. These incinerators have been permanently shut down. This Flexible Group will be removed during the ROP renewal.

#### **FGCOMPLEX2**

Special Condition IX.1 in this Flexible Group reads:

- "1. Both of the following apply to each incinerator in FGCOMPLEX2, and to its scrubber train, when the incinerator commences trial operation after the air quality control improvements authorized by this Permit have been completed for that incinerator<sup>2</sup>:
- a. The Special Conditions in FGAQC1 become applicable requirements for that incinerator and its scrubber train.
  - b. The Special Conditions in FGCOMPLEX2 cease to be applicable requirements for that incinerator and its scrubber train."

The air quality improvements for the Complex 2 incinerators have been completed. Per SC 1.b, the Special Conditions in FGCOMPLEX2 are no longer applicable requirements for these incinerators or their associated control equipment. FGCOMPLEX2 will be removed during the ROP renewal.

#### **FGLIMESTORAGE**

This Flexible Group includes the storage devices that are used to store lime, which is used to stabilize the sludge that is hauled offsite for landfilling. This Flexible Group addresses process equipment that is part of the Central Offload Facility (COF). The COF is supposed to be decommissioned later in 2019. It is unsure whether this equipment will continue to be used after this year. During the site visit, Melvin told me that the methods of compliance for the requirements in this Flexible Group table have not changed.

Special Conditions in section "I. Emission Limits" put forth emission limits for particulate matter and opacity (S.C.

I.1 and I.2). SCs VI.1 through VI.3 serve as the compliance method for these emission limits, requiring that the baghouses associated with the Flexible Group are inspected at least once per month, that the pressure drop across the baghouse is monitored, and that visible emission readings be performed and recorded during daylight hours.

Melvin told me that preventative maintenance activities are tracked via the facility's Work Assessment Management System, or WAMS, software program on a monthly basis. Inspections are performed on each silo. Regarding the requirement to monitor and record the pressure drop and visible emissions from the baghouse during lime loading, Melvin stated that this is being done the same way as has been described during past site visits. For the pressure drop, he explained that the facility's Ovation software system has a screen for the lime storage silos that indicates the pressure drop and includes an alarm indicator when the pressure drop exceeds its set point. Melvin provided me a screen shot from the Ovation system that shows the operating parameters that are being monitored when the lime system operates, which is attached to this report. The area of the screen where the alarm indicator is located is circled and highlighted in pink. Visible emissions readings are logged by facility staff on the "Ash System Shift Report" form.

The facility is **in compliance** with these conditions.

## **FGENGINES**

This Flexible Group addresses the seventeen emergency engines at the Detroit WWTP. These engines are a mix of natural gas and diesel-fired units.

### I. Emission Limits

SC I.1 – the engines are limited to 36 tpy in a 12-month rolling time period. GLWA tracks the usage and NOx emissions from these engines via an electronic spreadsheet. Engine usage is initially tracked using a form called the "Emergency Generator Usage Report", and the information is summarized on a form that is completed for each month titled "Emergency Generator Operating Data Summary for xx", where xx is the month. Melvin provided me with a copy of the form for June 2019, which is attached to this report for reference. This form presents the cumulative operating hours on each engine at the beginning and end of the month, the hours that each engine operated during that month, and the monthly NOx emissions for each engine, and total for all of the engines.

GLWA also maintains a spreadsheet at the end of each month titled "Emergency Generator Operating Summary for the Previous 12-months" that shows the total hours operated and the NOx emissions for each engine over the 12-month rolling time period. I was provided with a copy of the 12-month NOx emission records for June 28, 2019, which is attached to this report. These records show that the 12-month rolling NOx emissions from that date are 1,196.87 lbs., or 0.6 tons.

### II. Material Limits

There are no material limits put forth for this Flexible Group.

### III. Process/Operational Restrictions

SC III.1 – the sulfur content of the diesel fuel used in the engines is limited to 15 ppm. The fuel supplier (Waterfront Petroleum) sends a certificate of analysis with each load of diesel that includes the sulfur content. The facility uses ultra-low-sulfur diesel fuel, and the measured sulfur content has been well below the 15-ppm limit.

SC III.2 – this condition limits each engine to 500 hours of operation per 12-month rolling time period. The monthly records for June 2019, which are attached to this report, show that the total hours for the 12-month rolling period for each of the engines is well below 500 hours; the engine with the highest use, EU-P1, operated for 80.7 hours during the 12-month rolling period.

### IV. Design/Equipment Parameters

There are no design/equipment parameters provisions for this Flexible Group.

### V. Testing/Sampling



There are no testing or sampling requirements associated with this Flexible Group.

#### VI. Monitoring/Recordkeeping

GLWA is maintaining the records required by the conditions in this section.

SC VI.1 – the hours of operation of each engine on a monthly basis are being kept.

SC VI.2 – all required calculations that are required for this Flexible Group are being maintained.

SC VI.3 – records of monthly and 12-month rolling NOx emissions are being kept.

SC VI.4 – records of the sulfur content are being kept for each shipment of diesel fuel received.

SC VI.5 – a log of the monthly hours of operation of the engines is being maintained.

#### VII. Reporting

The required reports are being submitted, as required.

#### VIII. Stack/Vent Restrictions

The stacks/vents for the seventeen engines were not discussed during the site visit.

#### IX. Other Requirements

GLWA seems to be in compliance with the requirements of this section – SC IX.1 requires compliance with the provisions of 40 CFR Part 60 Subparts IIII and JJJJ, and SC IX.2 requires compliance with the provisions of 40 CFR Part 63 Subpart ZZZZ.

### **FGCIENGINES**

This Flexible Group also addresses emergency diesel-fired engines, separating out five of the seventeen engines from FGENGINES into a different Flexible Group. These five engines are diesel-fired units, and they are subject to the requirements of 40 CFR Part 60, Subpart IIII (New Source Performance Standards for Stationary Compression Ignition Engines). This Flexible Group puts forth the separate, specific requirements that these five engines are subject to in addition to the requirements found in FGENGINES.

Some of the limits in this Flexible Group and the records required are similar to FGENGINES. The sulfur in fuel information (limitation put forth in SC III.1, fuel certification records required in SC VI.4) is addressed with information that is provided by the fuel supplier (Waterfront Petroleum) and maintained by GLWA. The hours of operation, as required by SC III.2, and the reason that the engines are used, as referenced in both SC III.2 and III.3, is tracked using the summary sheets that were discussed for FGENGINES, as well as the Emergency Generator Usage Report, a copy of which is attached to this report for reference. The engines are equipped with non-resettable hours meters, as required in SC IV.1. In addition, staff at the WRRF maintain a spreadsheet that tracks the level of diesel fuel in each engine each month, as well as any fuel additions, to produce a record of the diesel fuel usage. The maintenance activities associated with these engines are tracked using the WAMS internal software system. This information is used to track the number of hours operated for maintenance and testing purposes, which is limited by Subpart IIII to 100 hours for these purposes. All of the required records relating to the operation of the engines in FGCIENGINES, as described in the Special Conditions in Section VI. (Monitoring/Recordkeeping) of the Flexible Group are being kept and maintained by GLWA.

Regarding Special Condition V.1, GLWA maintains manuals for each engine that include the manufacturer emission certifications, which would contain the information to demonstrate compliance with the emission limits in Section I.( Emission Limits) of the Flexible Group. Accordingly, the engines did not need to have an initial performance test conducted.

Section IX. (Other Requirements) puts forth high-level citations for requires compliance with the provisions of 40 CFR Part 60 Subpart IIII, and 40 CFR Part 63 Subpart ZZZZ.

The facility looks to be in substantial **compliance** with the requirements in FGCIENGINES.

### **FGNSPSBOILERS**

This Flexible Group addresses four small natural gas-fired boilers that, due to their relatively small heat input rating, are exempt from EGLE-AQD permitting requirements. The facility only installed three of the boilers, and there is no intention to install the fourth boiler. These boilers are still subject to requirements in 40 CFR Part 60, Subpart Dc. The only permit requirements associated with this Flexible Group are a requirement that the boilers only fire natural gas (SC III.1), and a requirement to record the amount of natural gas used in each boiler on a calendar month basis (SC VI.1). GLWA staff keep track of facility-wide natural gas usage. There is a separate natural gas meter for each building at the facility, and a separate meter for each of the boilers. GLWA tracks the gas usage and records it in a spreadsheet on a monthly basis. I was provided with a copy of the spreadsheet for May 2019, which is attached to this report for reference. The boilers are designated as boilers 1, 2 and 3 in the records, which I was told corresponds to EUBOILER7, 8 and 9. The facility is **in compliance** with the requirements in FGNSPSBOILERS.

## **FGCOLDCLEANERS**

During my site visit in 2017, I was told that facility staff did a facility-wide inventory of cold cleaners and found that there are only two left. The cold cleaners are no longer in use; they are empty, and the lids are closed. During the 2017 site visit, GLWA said that they planned to assess whether they will continue to have any cold cleaners on site during the ROP renewal process. The ROP renewal application still maintains this Flexible Group table.

During this site visit, Melvin told me that GLWA maintains the two cold cleaners in their inventory, but that they are still not being used.

## **FGAQCI**

The description for this Flexible Group reads:

“This flexible group covers the Complex 2 incinerators for which the air quality control improvements (AQCI) have been completed. When the AQCI have been completed, it will consist of eight (8) multiple hearth sewage sludge incinerators, each with a venturi scrubber followed by an impingement tray wet scrubber and a mist eliminator. (PTI No. 61-13A)”

The upgrades to the Complex 2 incinerators were completed in 2017. The following paragraphs describe the compliance of Incinerator Units 7 through 14 with the requirements in FGAQCI.

### I. Emission Limits and V. Testing/Sampling

When an incinerator/SSI was upgraded as part of the air quality control improvements project, new emission limits and emissions testing requirements were triggered. The testing requirement is the method through which compliance with the emission limits in section I. (Emission Limits) of FGAQCI is determined, specifically the emission limits put forth in SCs I.1 through I.15. Some of the pollutants and their associated emission limits, as listed in this section, are taken directly from Subpart MMMM. The other pollutants/emission limits were analyzed as part of the review of Permit to Install Nos. 61-13 and 61-13A. The testing required in SC V.1 in this Flexible Group is only required to be performed once after the air quality control improvements have been completed for each pair of incinerators in FGAQCI, within 180 days after trial operation of either incinerator in that pair of incinerators.

Emission testing was performed on Incinerators 7 and 8 in April 2015, and on Incinerators 9 and 10 in October 2015 to demonstrate compliance with the emission limits in FGAQCI, to satisfy the testing requirement of Special Condition V.1, and to satisfy the initial compliance requirement of paragraph 60.5185 of 40 CFR Part 60 Subpart MMMM. In the aftermath of the March 4, 2016 fire, it was decided that these units would be re-tested to determine post-fire repair emissions for Units 7-10, and to verify that the emissions are still compliant after the repairs to the SSIs and their associated emission control equipment. In addition, the initial testing needed to be performed on SSI Units 11-14. The testing required in SC V.1 in the Flexible Group was completed in April and May of 2017. The test results demonstrated compliance with the applicable emission limits for each pollutant, as put forth in SCs I.1 through I.15 of FGAQCI. The compliance emissions tests satisfy the requirements in Section V of this Flexible Group. The test reports associated with these compliance emissions tests can be found in the WRRF facility file.

The facility's compliance with the emission limits in SCs I.16 through I.26 is tracked through a calculation spreadsheet that is maintained by GLWA staff. Melvin provided me with a copy of the 12-month rolling emissions calculation sheet from June 2016 through May 2019. A copy of this information is attached to this report. The

information presented in this spreadsheet shows compliance with the emission limits in SCs I.16 through I.26.

## II. Material Limits

The Complex 2 incinerators are limited to 129,564 dry tons of total sludge feed per year. The description of the sludge conveyance to the SSIs and the method by which it is tracked and weighed in the following paragraphs was provided in the report for the last site visit, and it is still valid.

All of the sludge that is to be processed in the incinerators is loaded onto the J Belt conveyor from the filter presses adjacent to the incinerators. The J Belt runs the length of the Complex 2 area on the south side of the building. Sludge from the J Belt is directed to the M Belt, which feeds incinerators 7-10, and the N Belt, which feeds incinerators 11-14. Using incinerators 7-10 as an example, a reading of the weight of the sludge on the M Belt is taken, then another reading is taken of the weight of the sludge on the Q Belt, which directs some of the sludge on the M Belt to incinerators 9 and 10. In this way, the facility tracks the amount of wet tons sent to the incinerators. Once each shift (or every 8 hours), sludge samples are taken to determine certain properties, including percent dry solids and pH. This information is factored with the tracking of the amount of sludge, in wet tons, sent to the incinerators to determine the dry solids feed rate.

The facility's Ovation software system is used to track all incinerator operating hours, as well as the time that each unit is in standby and is out of service. Melvin told me that he tracks the amount of dry tons of sludge fed to the incinerators per day, the incinerator operating hours per day, and the dry tons per hour fed to each incinerator, based on averaging. The facility is **in compliance** with this limit.

## III. Process/Operational Restrictions

GLWA is in compliance with the Special Conditions in this section.

For SC III.1, the facility maintains and operates the scrubber system when the incinerators are operating.

For SCs III.2 and III.3, GLWA has a Malfunction Abatement Plan (MAP) with established scrubber and incinerator hearth temperature parameters. In accordance with paragraph 60.5190 of Subpart Mmmm, as well as Special Condition V.5 of FG-4M-IN CIN, GLWA establishes new operating parameters for incinerator temperature, scrubber liquid flow rate, and pressure drop across the scrubber (which are referenced in SC III.2), along with scrubber liquid pH, as required during compliance emissions testing events. An updated Malfunction Abatement Plan for GLWA Incinerators/SSIs was included with the ROP renewal application for the WRRF.

## IV. Design/Equipment Parameters

All of the required monitoring equipment/devices were installed in compliance with the conditions in this section. SC IV.1 requires devices to monitor the water flow rate for each scrubber, the differential pressure across the inlet and outlet of each scrubber, and the hearth #1 combustion temperature. SC IV.2 requires that the oxygen emissions for each incinerator be monitored on a continuous basis. SC IV.3 requires that the visible emissions from each incinerator be monitored on a continuous basis; this is accomplished via the COMS units for each SSI.

## V. Testing/Sampling

The facility's compliance with the testing requirement of SC V.1 was discussed in the first part of the discussion for this Flexible Group.

## VI. Monitoring/Recordkeeping

The facility is in compliance with the monitoring and recordkeeping requirements in this section.

For SC VI.1, GLWA continuously monitors oxygen from each incinerator, when operating.

For SC VI.2, visible emissions/opacity are continuously being monitored using the facility's COMS.

For SC VI.3, periodic inspections are performed on the incinerators. Melvin told me that records of inspections and any resulting maintenance are kept by GLWA staff and logged in the internal WAMS system.

For SCs VI.4 and VI.5, as provided in the discussion for SC IV.1, the required incinerator and scrubber operating parameters are being monitored and recorded.

SCs VI.6 and VI.8 – These conditions address monitoring of the sludge feed rate to the SSIs. VI.6 requires that the daily sludge feed rate, on a wet ton basis, be monitored and recorded. VI.8 requires that the sludge feed rate, on a dry tons basis, be monitored and recorded on a calendar month and 12 month rolling time period basis. SC VI.8 includes references to FGCOMPLEX2 and SSI Nos. 1, 3, 4, 5 and 6, which no longer apply – the requirements of FGCOMPLEX2 are no longer applicable, and the listed SSIs have been permanently removed from service. Each of these SCs specifies that the information shall be monitored and recorded, “...except during periods when there is no sludge in the incinerator.” The monitoring of sludge feed rate was described in the discussion in the Material Limits section for this Flexible Group.

For SC VI.7, as referenced in the discussion for the facility’s compliance with SCs I.16 through I.26, Melvin provided me with a copy of the 12-month rolling emissions calculation sheet from June 2016 through May 2019, which is attached to this report.

## VII. Reporting

All required reports are being submitted by GLWA.

For SC VII.4, GLWA notified EGLE-AQD when the modifications to the Complex 2 incinerators were completed in accordance with this condition.

For SC VII.5, DWSD, who was the owner and operator of the WRRF facility at the time, submitted the closure notification for Incinerator No. 2.

## VIII. Stack/Vent Restrictions

The stack parameters provided in the SC table have been established and used for different air quality related purposes, including air dispersion modeling and MAERS reports, for many years. The stack parameters were not specifically discussed during this site visit.

## IX. Other Requirements

The facility is in compliance with the Special Conditions in this section.

For SC IX.1, this condition states that FGAQCI becomes applicable when the upgrades are made to the Complex 2 incinerators, and that the terms and conditions of FGCOMPLEX2 are no longer applicable.

Regarding SC IX.2, GLWA has drafted and implemented a Malfunction Abatement Plan. An updated plan was included with the facility’s ROP renewal application.

For SC IX.3, Incinerator No. 2 has been permanently shut down.

## **FG4M-INCIN**

This Flexible Group contains the requirements associated with 40 CFR Part 60 Subpart M that apply to the incinerators at the WRRF. These requirements became effective on March 21, 2016. As described in the last section, as the Complex2 incinerators were upgraded, emissions testing was performed that serves to meet the initial compliance demonstration requirements of Subpart M, which is also presented in Special Condition V.1 of this Flexible Group.

The following paragraphs describe the compliance of Incinerator Units 7 through 14 with the requirements in FG4M-INCIN.

### I. Emission Limits and V. Testing/Sampling

As previously mentioned, at the time of my site visit, compliance emissions testing was taking place. The testing event took place from June 18-23, 2019. The Air Emissions Test Report, which summarizes the results of the testing, was submitted to EGLE-AQD via correspondence dated August 21, 2019. The information presented in the report shows that the emissions measured during the tests are **in compliance** with the emission limits in SCs I.1 through 10. A copy of a summary of the test results from the Air Emissions Test Report is attached to this report for reference. Please note that not all pollutants need to be part of the compliance emissions test for the individual SSIs based on the criteria and requirements put forth in Subpart M.

The test report associated with the June 2019 compliance emissions tests can be found in the WRRF facility

file. As of the date of the completing of this report, the review of the test report by AQD's Technical Programs Unit staff has not yet been completed.

## II. Material Limits

There are no material limits out forth in the ROP for this Flexible Group.

## III.Process/Operational Restrictions

SC III.1 puts forth that use of the bypass stack associated with an incinerator at any time that sewage sludge is being charged to that incinerator is an emission standards deviation for all of the pollutants listed in and limited by SCs I.1 through 10. Any use of bypass stacks is tracked on a form in the facility's Telecon software system. I was told that the Incineration Complex Supervisor is tasked with recording all stack bypasses. In addition, the facility's Ovation software system track all times that the damper to the bypass stack is open. GLWA notifies EGLE-AQD of all bypass events. In addition, the bypass events are reported in the facility's Subpart M MMM deviation reports and the Subpart M MMM Annual Compliance Report, copies of which are submitted to the EGLE-AQD Detroit Office.

## IV. Design/Equipment Parameters

SC IV.1 – the facility did not choose the compliance demonstration option described in SCs V.2 and V.4, instead opting to perform compliance emissions tests, as described in SCs V.1 and V.3. Thus, SC IV.1 is not valid.

For SCs IV.2 through IV.6, the facility is **in compliance** with these requirements. All of the monitoring equipment/devices that are specified in these SCs was installed during the upgrades to the Complex 2 incinerators – sewage sludge feed rate (IV.2), combustion chamber temperature (IV.3), pressure drop across the inlet and outlet of each scrubber (IV.4), scrubber liquid flow rate (IV.5), and scrubber liquid pH (IV.6).

## V. Testing/Sampling

Regarding the testing/sampling requirements in Section V, the recent compliance emissions testing satisfies the testing requirements in Subpart M MMM, as put forth in SCs V.1 and V.4. As part of the emissions testing, the facility established the incinerator and control equipment parameters detailed in SC V.5.a through d, as specified by 40 CFR 60.5190. In accordance with SC V.6, the bypass stack was not used during any of the compliance tests. The WRRF appears to have met the requirements put forth in the conditions in Section V of this Flexible Group.

## VI. Monitoring/Recordkeeping

GLWA is in compliance with the monitoring and recordkeeping requirements in this section.

For SC VI.1, Melvin confirmed that the method by which the facility monitors the sewage sludge feed rate is the same as described during my last site visit. GLWA staff monitor and record the sludge feed rate. Weightometers on the sludge conveyors send a wet tons feed rate value to the Ovation system every 15 seconds. In addition, facility staff calculate the daily average sewage sludge feed rate to each incinerator. For each shift day, an Incineration Report is created that includes the total sludge feed. WRRF staff track the amount of material on the sludge feed belts, the hours of incineration, and the number of wet tons per day (which is used to calculate the dry tons) to obtain the daily average.

For SC VI.2, a grab sample of sludge is taken once per shift, more frequently than required by this condition, and the moisture content of each sample is determined and used to determine the sludge feed rate in dry tons.

For SC VI.3, the Ovation system used to track the operation of the incinerators includes measurements of the combustion temperature that are taken and recorded in the system every 15 seconds.

For SC VI.4, a site-specific monitoring (SSM) plan, as described in 60.5200, was submitted to AQD on February 10, 2015.

For SCs VI.5 through VI.7, the pressure drop across the inlet and outlet of each scrubber (VI.5), the liquid flow rate through each scrubber (VI.6), and the scrubber liquid pH (VI.7) are measured and recorded in accordance with these conditions.

For SC VI.8, GLWA keeps track of the ROP certification reports that are sent to EGLE-AQD.

For SC VI.9, GLWA does not elect to utilize the compliance option involving continuous monitoring described in SCs V.2 and V.4.

#### VII. Reporting

The WRRF facility is in compliance with the reporting requirements in the Flexible Group. SCs VII.4 and VII.5 are not applicable at this time as GLWA is not utilizing the continuous monitoring compliance option.

#### VIII. Stack/Vent Restrictions

There are no stack/vent parameters specified for this Flexible Group.

#### IX. Other Requirements

SC IX.1 states that the requirements of FG4M-INCIN became effective on March 21, 2016.

For SC IX.2, GLWA submitted the Operator Training and Qualification Program to DEQ-AQD on August 26, 2015. AQD approved the program, and the initial training program was conducted at the facility during the week of January 5, 2016. GLWA continues to offer the training to new staff, and existing staff as needed. Melvin told me that a refreshed training was held during the week of June 10, 2019.

For SC IX.3, the air pollution control device inspection required by this SC and 40 CFR 60.5220(c) were completed as the Complex 2 incinerators were repaired and upgraded after the 2016 fire, brought into service, and had their required compliance emissions tests performed.

For SC IX.4, the WRRF facility is demonstrating substantial compliance with the applicable provisions of Subpart Mmmm and Rule 972. The Subpart Mmmm Initial Compliance Report for the GLWA WRRF facility, required by 40 CFR 60.5235(b), was submitted by GLWA via correspondence dated August 15, 2017. GLWA has completed and submitted the Subpart Mmmm Annual Compliance Report, and the required Subpart Mmmm deviation reports.

SC IX.5 – This condition put forth that the emission limits and standards of Subpart Mmmm apply to each emission unit in this Flexible Group at all time that the emission unit is operating and during periods of malfunction. The condition further states that the emission limits and standards apply to emissions from a bypass stack or vent while sewage sludge is in the combustion chamber.

As part of the report associated with last year's site visit, a discussion regarding the intent of 40 CFR 60.5165 was provided. GLWA had questions about this portion of Subpart Mmmm. The questions were posed to EPA, who responded that the intent of 40 CFR 60.5165 and 5180 is for the emission limits of Subpart Mmmm to apply at any time that sludge remains in the combustion chamber and is venting to the ambient air, even during a malfunction event involving a bypass stack. A copy of the question that was sent to EPA and their response can be found in the facility file, attached to the report for the scheduled inspection that took place in 2018.

In accordance with the requirements of this condition and Subpart Mmmm, GLWA facility monitors compliance with the emission limits in Subpart Mmmm at all times when sludge is in the combustion chamber. I have been told during past facility visits that when a bypass opens on an incinerator, the screw conveyor that feeds sludge to that incinerator shuts down, as does the burner. I have also been told that it is estimated that it takes 90 minutes to get the sludge burned out from hearth 3 to 6.

GLWA reports all periods that SSIs vent to their respective bypass stacks to AQD as an excursion via a Main Stack Excursion Report. The excursions are also included in the facility's Subpart Mmmm semi-annual deviation reports, which also includes an electronic file that GLWA sends to AQD that provides the operating parameters that are recorded throughout the semi-annual period. I was told that facility staff estimate emissions during main stack bypass events, and keep these on file. The emission estimates remove the control efficiencies for pollutants for which the SSI control equipment reduces emissions.

#### **FGDryerTrains**

This Flexible Group addresses the four dryer trains in the NEFCO Biosolids Drying Facility (BDF). This BDF has been operating since the Fall of 2015, and a couple of rounds of compliance emissions testing has been performed on the dryer trains.

The following paragraphs describe the compliance of the four sludge dryer trains with the requirements in FGDryerTrains.

### I. Emission Limits

The facility is currently in **compliance** with the emission limits put forth in this section. The initial compliance emission testing required by SC V.1 was performed on the four sludge dryer trains, identified in the facility's permits as EUDryerTrainA, EUDryerTrainB, EUDryerTrainC and EUDryerTrainD, from January 18-21, 2016. The exhaust from the dryers, which are natural gas-fired and equipped with low-NOx burners, were tested for emissions of PM, PM10, PM2.5, NOx, CO, SO2, VOC, lead and hydrogen sulfide, and the results compared to the permit limits for these pollutants in SCs I.1 through I.12.

The measured emissions of the PMs, NOx, CO, VOC, lead and hydrogen sulfide from all four dryers from the initial compliance emissions tests were in compliance with the applicable permit limit. However, there were measured exceedances of the SO2 emission limit. In the time since, the facility implemented a SO2 Compliance Plan to address the SO2 exceedance and lower SO2 emissions and in May 2017, NEFCO and GLWA made the decision to install the packed tower scrubber after the RTO in the exhaust stream. Consent Order AQD No. 7-2017 was also entered with GLWA, becoming effective on June 5, 2017. Some of the requirements of the Order address the SO2 emissions from the dryers. The Order will be discussed in further detail later in this report.

Section V of this Flexible Group puts forth the testing requirements for the dryers. The facility is required to perform periodic testing of NOx, CO, PM, PM10 and PM2.5 emissions. The Order requires further testing of SO2 emissions from the dryers.

The last periodic compliance emissions testing for NOx, CO, PM, PM10 and PM2.5 emissions was performed from January 9-11, 2018. In accordance with the requirements in SC V.2b, Dryer Trains A and D were the two dryers that were tested. The testing showed that all of the measured emissions were in compliance with permitted limits. A summary of the test results is presented in the following tables.

For EUDryerTrainA:

<u>Pollutant</u>	<u>Test result</u>	<u>Permit Limit</u>
NOx	1.20 lb/hour	3.95 lb/hour
CO	0.23 lb/hour	3.67 lb/hour
PM/PM10/PM2.5	Front half: 0.04 lb/hour Back half: 0.22 lb/hour Front & Back half: 0.26 lb/hour	PM: 1.22 lb/hour PM10: 1.63 lb/hour PM2.5: 1.14 lb/hour

For EUDryerTrainD:

<u>Pollutant</u>	<u>Test result</u>	<u>Permit Limit</u>
NOx	1.02 lb/hour	3.95 lb/hour
CO	0.18 lb/hour	3.67 lb/hour
PM/PM10/PM2.5	Front half: 0.03 lb/hour Back half: 0.25 lb/hour Front & Back half: 0.28 lb/hour	PM: 1.22 lb/hour PM10: 1.63 lb/hour PM2.5: 1.14 lb/hour

The most recent SO2 compliance emissions tests were performed on all four dryers from December 12-13, 2018. This testing was performed in accordance with the SO2 testing requirements in the Consent Order.

SO2 results for the four dryer trains:

<u>Dryer Train</u>	<u>Test result</u>	<u>SO2 Permit Limit</u>
EUDryerTrainA	0 lb./hour (none detected)	0.82 lb/hour
EUDryerTrainB	0.01 lb./hour	0.82 lb/hour
EUDryerTrainC	0.02 lb./hour	0.82 lb/hour
EUDryerTrainD	0.08 lb./hour	0.82 lb/hour

## II. Material Limits

There are no material limits put forth for this Flexible Group.

## III. Process/Operational Restrictions

SC III.1 limits the total operating time for all four dryer trains to 31,536 hours per 12-month rolling time period. Melvin provided me with run time data for April 2019, which includes 12-month rolling time period totals (denoted as "365-Day Rolling Total"). This information is attached to this report for reference. The records show that the 12-month rolling time period run hours for the four dryers, as of the end of April 2019, was 21,602 hours.

## IV. Design/Equipment Parameters

The facility is **in compliance** with the requirements in this section (SCs IV.1 through 5). According to NEFCO staff, the dryers are only operated when the associated control equipment (scrubbers, RTOs) are operational (SC IV.1 and 2). This is put forth in the Malfunction Abatement Plan for the BDF. Similarly, NEFCO and GLWA staff have stated that material is only sent to the recycle bins when the associated fabric filter controls are operating properly (SC VI.3).

During visits to the BDF portion of the facility, I was able to see that NEFCO is monitoring the RTO combustion chamber temperature, the pressure drop across the IT scrubbers and the recycle bin fabric filters, the liquid flow rate to the IT scrubber, and the liquid flow rate to and the scrubber liquid pH of the packed tower scrubber (SCs IV.4 and 5) when the process is operating via the SCADA control screen. I visited the facility and looked at the control screens during the December 2018 compliance emissions test.

## V. Testing/Sampling

As described in the discussion for Section I. (Emission Limits), the testing required by SC V.1 was conducted in compliance with this condition in January 2016. The facility last performed the testing required in SC V.2 in January 2018. In accordance with the provisions in SC V.2b, Dryer Trains A and D were tested.

## VI. Monitoring/Recordkeeping

The facility is in compliance with the recordkeeping requirements in this section. Melvin provided me with additional records from April 2019 that demonstrate how the facility keeps the records required by the conditions in this section. The records show that the monthly and 12-month rolling hours of operation of the dryers (SC VI.1), the operating parameters of the dryer control equipment listed in SCs VI.2 and VI.3, of the pressure drop across each of the recycle bin fabric filter dust collectors (SC VI.4), and the visible emission readings of the recycle bin stacks during routine operating conditions (SC VI.5) are being logged. The records are attached to this report for reference.

## VII. Reporting

All required reports required by SCs VII.1 through 3 are being submitted in relation to the dryers.

## VIII. Stack/Vent Restrictions

The stack parameters for the dryers and recycle bins were not addressed during this site visit.

## IX. Other Requirements

There are no conditions in this section of the Flexible Group.

### **FGDryerFacility**

This Flexible Group covers the entire Biosolids Drying Facility. NEFCO staff track the BDF's compliance with the permit requirements that relate to their portion of the facility. This information is kept by NEFCO, and it is also shared with and kept by GLWA.

The following paragraphs describe the compliance of the BDF facility with the requirements in FGDryerFacility.

#### I. Emission Limits



NEFCO calculates monthly and 12 month rolling time period emissions to demonstrate compliance with the emission limits put forth in SCs I.1 through I.6. Melvin provided me with a copy of the spreadsheet that is used to track the emission information for April 2019, which is attached to this report for reference. This information shows that emissions from the BDF are in compliance with these emission limits. Reported 12-month rolling emissions at the end of April 2019 are 42.66 tons of NOX (vs. permit limit of 71.5 tpy), 39.64 tons of CO (vs. permit limit of 65.7 tpy), 13.18 tons of PM (vs. permit limit of 20 tpy), 17.61 tons of PM10 (vs. permit limit of 26.9 tpy), 12.31 tons of PM2.5 (vs. permit limit of 19.2 tpy), and 48,688.40 tons of CO2e (vs. permit limit of 90,361 tpy). NEFCO tracks visible emissions, which are limited in SC I.7, from the roadways of the BDF. I was provided with a copy of the Fugitive Dust Emission Log that is used by NEFCO to track fugitive emissions, which is attached to this report for reference.

## II. Material Limits

There are no material limits put forth for this Flexible Group.

## III. Process/Operational Restrictions

The facility appears to be in compliance with the permit requirements in this section of the Flexible Group. I was told that the facility keeps the pug mill's cover closed when the pug mill is in operation (SC III.1). A Malfunction Abatement Plan (MAP) has been submitted, and it was updated on September 25, 2017 to include the packed tower scrubbers downstream of the RTOs. I was told that NEFCO adheres to the MAP when operating the dryer trains (SC III.2). The facility follows their procedure of adding non-volatile oil to dryer product (pellets) that is being loaded to trucks (SC III.3), and material is transferred to the silos using enclosed conveyors (SC III.4). The records that are kept by NEFCO account for the run time of the natural gas-fired make up air units (also referred to as air handling units). The April 2019 records that are attached to this report show a 12-month rolling total of 10,234.3907 hours of operation of the air handling unit. This number represents the total operating time of the air handling equipment, not just the time when natural gas is being burned; thus, the facility is well in compliance with SC III.5.

## IV. Design/Equipment Parameters

The facility looks to be **in compliance** with the requirements in this section. Facility roadways are paved, and NEFCO adheres to a fugitive dust management plan for the BDF (SC IV.1). NEFCO monitors the operating parameters for the BDF building ventilation scrubber that are required to be monitored by SC IV.2. A copy of the records of this information for April 2019 is attached to this report for reference.

## V. Testing/Sampling

There are no testing/sampling requirements associated with this Flexible Group.

## VI. Monitoring/Recordkeeping

The information that is required to be monitored and recorded by the conditions in this section is being kept by NEFCO and GLWA. Per SC VI.1, GLWA and NEFCO maintain the required records in the required timeframes. The records from April 2019 that are attached to this report show that the monthly and 12-month rolling time period records of the emission calculations required in SC VI.2 are being kept in an acceptable format. The operating parameters for the scrubber that controls ambient exhaust from the BDF building is kept on a per shift basis (SC VI.3). The facility logs fugitive dust management measures at the facility (SC VI.4), and the use of the air handling equipment (EUMakeUpAir) is logged with the monthly and 12-month records for dryer train 1 (SC VI.5).

## VII. Reporting

All required reports in SCs VII.1 through 4 are being submitted in relation to the BDF.

## VIII. Stack/Vent Restrictions

The stack parameters for the various BDF building ambient exhaust points described in SCs VIII.1 through VIII.6 were not addressed during this site visit.

## IX. Other Requirements

There are no conditions in this section of the Flexible Group.

### **FG2013Project**

This Flexible Group covers all of the Complex 2 incinerators that have been upgraded (they have all been upgraded) and the BDF. The following paragraphs describe the compliance of these portions of the WRRF facility with the requirements in FG2013Project.

#### I. Emission Limits

Melvin provided me a copy of a recordkeeping sheet titled "FG2013 Project 12-month rolling totals" that includes emissions calculations from June 2016 through May 2019. I was told that this spreadsheet combines the emissions information from the Complex 2 incinerators with the emissions data for the BDF that is provided to GLWA by NEFCO. The information presented that the facility is currently in compliance with the emission limits, and has been for all of the months included on the sheet. A copy of the spreadsheet is attached to this report for reference.

#### II. Material Limits

There are no material limits put forth for this Flexible Group.

#### III. Process/Operational Restrictions

There are no process/operational restrictions put forth for this Flexible Group.

#### IV. Design/Equipment Parameters

There are design/equipment parameters specified for this Flexible Group.

#### V. Testing/Sampling

There are no testing/sampling requirements associated with this Flexible Group.

#### VI. Monitoring/Recordkeeping

As provided in the discussion for the Emission Limit section, GLWA maintains records of the emissions from all of the equipment included as part of this Flexible Group. The facility is in compliance with SC VI.1.

Regarding SC.VI.2, GLWA, in coordination with EGLE-AQD's Air Monitoring Unit (AMU) group, set up and operated the ambient NO<sub>2</sub> monitoring program that was required by this condition. GLWA met the requirements put forth in SC VI.2 to complete the monitoring program. GLWA presented data to AQD-AMU to demonstrate one full year of NO<sub>2</sub> monitoring data showing numbers below 50% of the NO<sub>2</sub> NAAQS, and they requested AQD-AMU approval to cease the NO<sub>2</sub> monitoring program. An e-mail message was sent to GLWA by AQD-AMU dated September 13, 2018 that served to inform GLWA that they can cease the NO<sub>2</sub> monitoring program. A copy of the e-mail exchange is attached to this report for reference. GLWA has satisfied the requirements of SC VI.2, and this SC is no longer applicable going forward.

#### VII. Reporting

All required reports are being submitted. SCs VII.4 and VII.5 address the NO<sub>2</sub> monitoring program. As previously mentioned, GLWA has satisfied the monitoring requirements, and AQD agreed in September 2018 that GLWA could cease the monitoring program. These two SCs are no longer applicable.

#### VIII. Stack/Vent Restrictions

There are no stack/vent restrictions associated with this Flexible Group.

#### IX. Other Requirements

There are no conditions in this section of the Flexible Group.

### **FGDryIncTrans**

This Flexible Group was created as a result of the review of Permit to Install No. 61-13A. The Flexible Group contains requirements to ensure that during operation of the biosolids drying facility before incinerators 1, 3, 4, 5, and 6 permanently cease operating, there is not a significant emission increase of a regulated new source review pollutant.

Incinerators 1, 3, 4 and 5 were permanently decommissioned on June 1, 2017. Accordingly, the requirements in FGDryIncTrans are no longer in effect.

### **Consent Order**

Consent Order AQD No. 7-2017 became effective on June 5, 2017. The Order, which is in full force and effect for a period of at least four years (paragraph 18), was entered to resolve the air violations resulting from the March 4, 2016 fire at the WRRF facility, and the emissions testing violations (measured SO<sub>2</sub> exceedances) associated with the biosolids dryers at the BDF portion of the facility. There are some specific requirements in the Order that pertain to operations at the facility.

Paragraph 9.A.- GLWA was required to comply with the SO<sub>2</sub> emission limit in FGDryerTrains no later than December 31, 2017. GLWA and NEFCO completed work on the previously mentioned SO<sub>2</sub> Compliance Plan in order to meet this deadline. The post-RTO packed tower scrubber was installed and operational, with the work being completed prior to the deadline.

Paragraph 9.B.1 – the facility permanently ceased operating the Complex 1 incinerators by June 30, 2017.

Paragraph 9.B.2 – the facility is in compliance. Sludge feed rate is monitored, but no longer to demonstrate compliance with the limit in FGDryIncTrans, as referenced in the Order. The requirements of the FGDryIncTrans Flexible Group are no longer in effect with the permanent decommissioning of the Complex 1 incinerators.

Paragraph 9.C – the conditions in 9.C no longer apply after the requirement in paragraph 9.B.1 has been met.

Paragraph 9.D – the facility is required to meet the testing requirements for the dryers in FGDryerTrains put forth in 9.D.1 through 5. GLWA met the requirements of 9.D.1, as they submitted a test plan to test each of the dryers in FGDryerTrains by January 1, 2018. The testing was completed in January 2018, and the results were compliant with the permitted SO<sub>2</sub> emission limits. 9.D.5 puts forth that after three consecutive annual testing events that demonstrate compliance with the SO<sub>2</sub> emission limit in FGDryerTrains. GLWA can return to the testing schedule required in the ROP. GLWA conducted the second consecutive compliance emissions test for SO<sub>2</sub> on the four dryers that showed compliance with the emission limit in December 2018.

### **Compliance Determination**

Based upon the results of the June 20, 2019 site visit and subsequent records review, along with the results of the most recent compliance emissions testing at the facility, the GLWA WRRF facility appears to be in substantial compliance with the terms and conditions of Renewable Operating Permit MI-ROP-B2103-2014d and, in turn, applicable State and Federal regulations.

Attachments to this report: A copy of GLWA's Fugitive Dust Control Treatment Log document; a copy of a truck ticket for July 12, 2019 showing whether the tires of the truck were washed before it left the facility; a copy of the Complex 2 Ash System Shift Report for May 11, 2019; a print out of a screen shot from the Ovation system that shows the lime system operating parameters that are being monitored; a copy of the Emergency Generator Operating Data Summary sheet for June 2019; a copy of the Emergency Generator Operating Summary for the Previous 12-months sheet for June 28, 2019; a copy of the Emergency Generator Usage Report; a copy of the NSPS boiler usage records for May 2019; a copy of the 12-month rolling emissions calculations for the period from June 2016 through May 2019 for FGAQCI; a copy of the Summary of Results table from the Test Report from the June 18-23, 2019 compliance emissions testing; the run time records for April 2019 for FGDryerTrains; the daily operating parameter records for the air emissions control equipment for FGDryerTrains for April 2019; April 2019 monthly and 12-month rolling emissions calculations for FGDryerFacility; a copy of NEFCO's fugitive dust emission log form; a copy of the April 2019 BDF building scrubber system operating parameter log; a copy of the FG2013 12-month rolling total emissions calculations; a copy of the September 13, 2018 e-mail from AQD to GLWA informing GLWA that they can cease the NO<sub>2</sub> monitoring at the end of September 2018.

NAME Steve Webb

DATE 9/19/19

SUPERVISOR JK